

## HAND TOOL HANDLE MODIFICATION SYSTEM

by

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### BACKGROUND OF THE INVENTION

This invention is directed to hand tools for pounding, chopping or swinging, such as hammers and hatchets. The invention addresses the problem of how to maximize control of the tool and minimize fatigue to the user of the tool.

### DESCRIPTION OF THE DRAWINGS

These features, aspects and advantages of the present invention will become better understood with regard to the following description, appended claims and accompanying figures where:

Figure 1 is a side view of a basket having features of the invention;

Figure 2 is a bottom side view of the basket illustrated in Figure 1;

Figure 3 is a reverse side view of the basket illustrated in Figure 1;

5 Figure 4 is a butt end view of the basket illustrated in Figure 1;

Figure 5 is an exploded view of the basket illustrated in Figure 1;

10 Figure 6 is a side view of a tool carrying the basket illustrated in Figure 1, the tool being shown engaged with a safety scabbard;

Figure 7 is a detail view of the tool illustrated in Figure 6;

15 Figure 8 is a detail view of the hand tool illustrated in Figure 6, the tool being shown disengaged from the safety scabbard;

Figure 9 is an exploded view of a grip guard having features of the invention;

20 Figure 10 is a back side view of the grip guard illustrated in Figure 9;

Figure 11 is an end view of the grip guard illustrated in Figure 9;

Figure 12 is a side view of the grip guard illustrated in Figure 9;

25 Figure 13 is a side view of a handle carrying a grip guard having features of the invention;

Figure 14 illustrates the hand tool and grip guard combination illustrated in

Figure 13, wherein the combination is being gripped by the user in an alternative manner;

Figure 15 is a isometric view of a hand tool and thumb spur combination having features of the invention;

Figure 16 is a cross-sectional side view of the thumb spur illustrated in Figure 15;

Figure 17 is a isometric view of a handle and thumb spur combination having features of the invention;

Figure 18 is an isometric view of an alternative hand tool and thumb spur combination having features of the invention;

Figure 19 is an isometric view of a hand tool, thumb spur and chrysalis combination having features of the invention, wherein the chrysalis is shown in a pre-wrapped position;

Figure 20 is an isometric view of the combination of Figure 19 showing the chrysalis attached to the handle; and

Figure 21 is an isometric view of the combination illustrated in Figure 20, showing the combination in use.

### **DESCRIPTION OF THE INVENTION**

The following discussion describes in detail one embodiment of the invention

and several variations of that embodiment. This discussion should not be construed, however, as limiting the invention to those particular embodiments. Practitioners skilled in the art will recognize numerous other embodiments as well.

In one embodiment of the invention, the base end 12 of a hand tool handle 14 is provided with a "basket" 16 as illustrated in Figures 1-8. The basket 16 comprises a "knuckle guard" 18 made from a metal or strong plastic. The knuckle guard 18 comprises one or more finger openings 20. In the embodiment illustrated in the drawings, the knuckle guard 18 is attached to the underside 22 of the base end 12 of the hand tool handle 14 with a rear plate 24 and a pair of clamps 26. In the embodiment illustrated in the drawings, both the rear plate 24 and the clamps 26 are secured by screws 28.

The basket 16 provides the user with additional gripping surfaces 30, making it less arduous to securely hold the handle 14 of the tool 32 during use. This makes it less likely that the user will lose control of the tool 32. It also results in markedly decreased fatigue to the hand muscles of the user, especially after prolonged use of the tool 32. The knuckle guard 18 also protects the fingers of the user from injury due to inadvertent contact of the user's fingers with hard and/or sharp surfaces existing within the work area.

In the embodiment illustrated in the drawings, the knuckle guard 18 includes a forward facing opening 34 which allows a hand tool 34 using the basket 16 to be readily inserted and removed from my safety scabbard invention 33 disclosed in my pending U.S. Patent Application Serial No. 09/417,529, the entirety of which is incorporated herein by this reference. The forward facing opening 34 is adapted to surround the guide rail 35 of the safety scabbard 33 as illustrated in Figures 6-8.

In another embodiment, the invention is a "grip guard" 36 illustrated in Figures 9-14. Like the basket 16, the grip guard 36 comprises a knuckle guard 38 having one or more finger holes 40.

In the embodiment illustrated in the drawings, the grip guard 36 is attached to the base end 12 of the tool handle 14 using a single snap-on male connection pin 42 and one

locator pin 44. Both pins 42 and 44 are adapted to be received within corresponding holes 46 disposed within the base end 12 of the hand tool handle 14. The hole 46 in the handle 14 which receives the male connection pin 42 comprises a corresponding female connector 48 adapted to rigidly retain the male connection pin 42 during use. The male connection pin 42 and the female connection pin 48 can be of the same types illustrated in Figure 16. The embodiment of the grip guard 36 illustrated in the drawings is easily attached and deattached from the base end 12 of the hand tool handle 14 by depressing a spring loaded button 50 on the outside surface 52 of the grip guard 36 to release ball bearings (not shown) projecting laterally into the female connector 48.

Additional snap-on connection pins 42 can also be used in the securing of the grip guard 36 to the handle 14 of the hand tool 32.

In a preferred embodiment, the grip guard further comprises a lanyard receiving connection 53 suitable for attaching the grip guard to my lanyard invention fully described in my co-pending U.S. Application Serial No. \_\_\_\_\_, entitled "Hand Tool Lanyard System," which is incorporated herein in its entirety by this reference.

Like the basket 16, the grip guard 36 minimizes the chances that the user will inadvertently lose control of the tool 32. Also like the basket 16, the grip guard 36 markedly reduces fatigue to the hand muscles of the user by providing the user with additional gripping surfaces 54.

As illustrated in Figure 14, the grip guard 36 also allows the user to conveniently "choke up" on the handle 14 of the tool 32 where required by the job to be accomplished.

In another embodiment, the invention is a thumb spur 56 as illustrated in Figures 15-18. The thumb spur 56 is a knob which is readily attachable and deattachable to the base end 12 of the hand tool handle 14. In a typical embodiment, the thumb spur 56 comprises an elastomeric body 58 with a quick release male connection pin 60 disposed down the center of the body 58. Typically, the body 58 is made from a soft rubber or synthetic rubber material. Like the snap-on connection pin 42 used in the grip guard 36, the quick release male connection pin 60 allows the snap-on connection of the thumb spur 56 to a corresponding female receptor 62 disposed within the base 12 of the hand tool. In an alternative embodiment, the body 58 of the thumb spur 56 may be attachable to the handle 14 of the hand tool 32 via a threaded screw connection or other connection means known to the art.

The body 58 of the thumb spur 56 is typically between about 3/4 inches and about 1 1/4 inches in length and has a diameter of between about 1/2 inches and about 3/4 inches. Preferably, the male connection pin 60 is freely rotatable within the female connector 62 to minimize blistering of the user's abutting thumb or fingers during use.

The thumb spur 56 can be effectively used when attached to the side 64 of the hand tool handle 14 as illustrated in Figures 16 and 17. Alternatively, the thumb spur 56 can be effectively used when attached to the underside 22 of the hand tool handle 14 as illustrated in Figure 18. When attached to the side 64 of the handle 14, the thumb spur 56 provides the thumb and a finger of the user with additional gripping surfaces 66. When the thumb spur is used on the underside 22 of the hand tool handle 14, the thumb spur 56 provides the additional gripping surfaces 66 to the fingers of the user.

The thumb spur 56 has been found to provide additional gripping ability and control for a wide variety of elongate items. For example, the thumb spur can be used to increase gripping ability and support to baseball bats, tennis rackets, golf clubs, javelins,

hockey sticks, pole vault poles, cricket bats, ski poles, hand gun stocks, rifle and shot gun stocks, archery bows, etc. Also, the thumb spur can be advantageously used on a variety of handled tools, such as rakes, picks, mattocks, hoes, long-reach trimmers, brooms, weed whackers, wheel barrows, chain saws, machetes, large knives, cleavers, tenderizers, pot and pan handles, etc. In fact, the thumb spur can be advantageously used with virtually any tool or other object having a handle. The handles of all such tools and objects are preferably manufactured with one or more female receptors 62 so that a thumb spur 56 can be conveniently used with the tool or objects whenever it would be advantageous to do so.

In another embodiment, the invention is a chrysalis 68. The chrysalis 68 comprises a sheet of flexible material 70 adapted to be wrapped around the base end 12 of the hand tool handle 14. Preferably, the flexible material is padded to provide comfort to the hand of the user during use. In the embodiment illustrated in the drawings, the chrysalis 68 is secured to the handle 14 using hook and loop fasteners 72.

Preferably, the chrysalis 68 further comprises a control strap 74 adapted to conform to the back side of the user's hand. Most preferably, the control strap 74 is made from two opposed strap members 76 which are attachable and readily adjustable by hook and loop fasteners 78.

In the embodiments illustrated in the drawings, the chrysalis 68 is further secured to the handle of the hand tool 32 using a thumb spur 56 disposed within a reenforced thumb spur opening 80.

The use of the chrysalis 68, especially in combination with a thumb spur 56, has been found to markedly increase control and comfort in the use of heavy pounding and chopping tools 32, such as hammers and hatchets.



Having thus described the invention, it should be apparent that numerous structural modifications and adaptations may be resorted to without departing from the scope and fair meaning of the instant invention as set forth hereinabove and as described hereinbelow by the claims.